On-Road Heavy-Duty Diesel Vehicles: Emission Standards, Programs, and Policies

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California Environmental Protection Agency

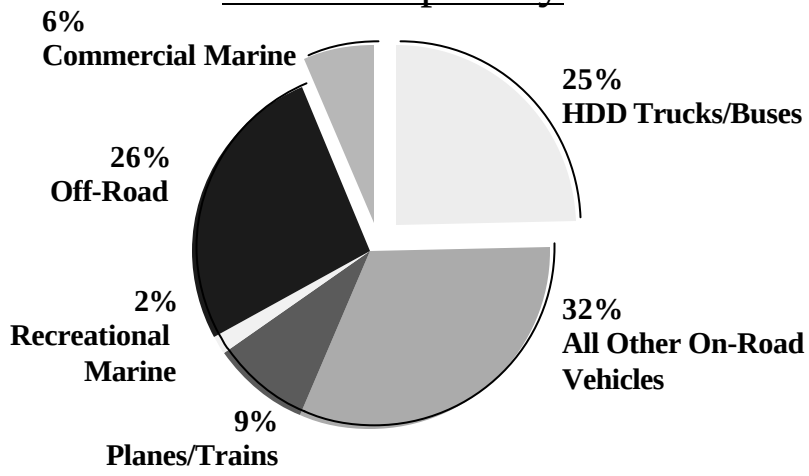
Air Resources Board

Introduction

- **Statewide Mobile Source NOx and PM Emissions for 2010**
- **Existing ARB Heavy-Duty Vehicle Programs**
- **Clean Air Plan: Strategies for a Healthy Future**
  - **PM Retrofit Fleet Rules**
  - **Engine Recalibration**
  - **Fleet Emission Reductions**
  - **Reduced Truck Idling**
- **Conclusions**

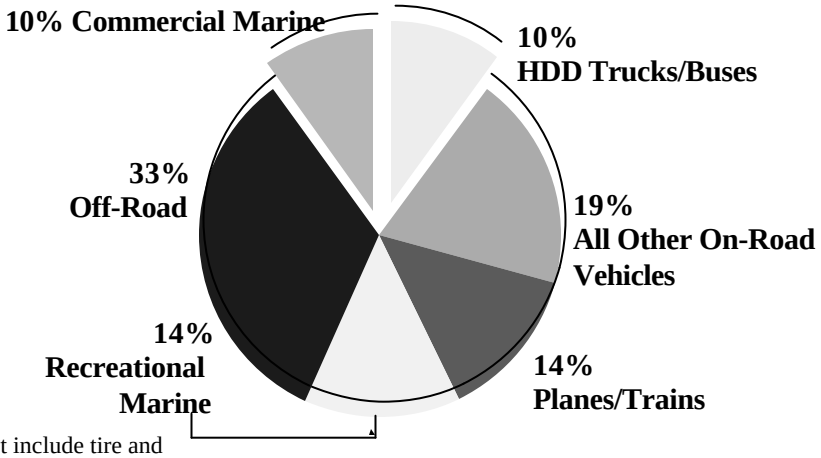
Statewide Mobile Source NOx Emissions - 2010

1698 tons per day



Statewide Mobile Source PM10 Emissions - 2010

89 tons per day*

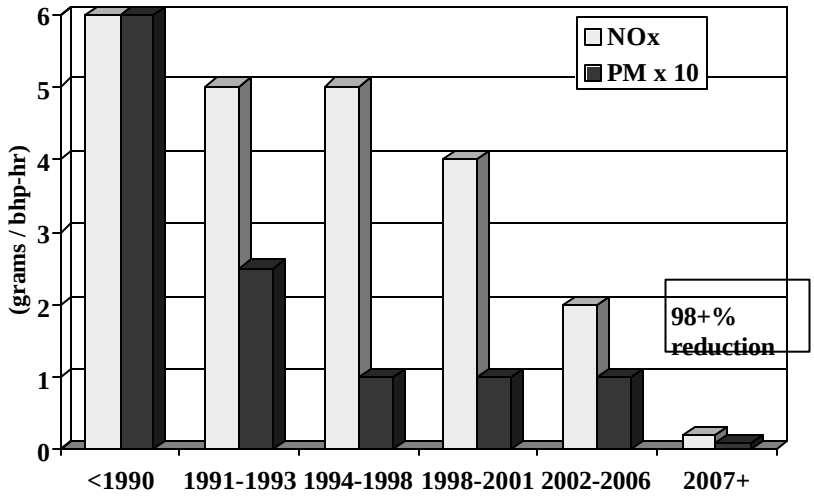


*Does not include tire and brakewear PM

Advances in Reduction of Heavy-Duty Engine Emissions

- **Large emission reductions have already been achieved with heavy-duty engines**
- **Future emission standards will give even greater emission reductions**
- **Emission benefits will directly effect those communities located near the Port**

Progress in Adopting NOx/PM Emission HDDE Standards



Existing ARB HDDV Programs

- **Heavy-Duty Vehicle Inspection and Periodic Smoke Inspection Programs**
  - **Measure smoke emissions**
  - **Detect tampering/malmaintenance**
- **Incentive Programs**
  - **Carl Moyer Program**
  - **Lower-Emission School Bus Program**

Clean Air Plan (CAP): Strategies for a Healthy Future

- **ARB's long-range plan for reducing criteria and toxic pollutants from every source**
- **The CAP includes:**
  - **Actions to reduce risk in EJ communities**
  - **Strategies for sources under state/federal authority**
  - **ARB element of regional plans prepared by air districts**
- **Public draft released on March 15, 2002**
  - **See www.arb.ca.gov/planning/caplan/caplan.htm**

HDDT Clean Air Plan Strategies

- **Expand incentive programs (ON-RD HVY-DUTY-1)**
  - **Contingent on funding through state budget process**
- **Shift HDV inspections from highways to communities (ON-RD HVY-DUTY-2)**
- **Vapor recovery for fuel cargo tankers (ON-RD HVY-DUTY-3)**

HDDT Clean Air Plan Strategies (continued)

- **HD On-Board Diagnostics (ON-RD HVY-DUTY-4)**
- **Expand HDV inspections to detect NOx (ON-RD HVY-DUTY-5)**
- **Manufacturer-required in-use testing (ON-RD HVY-DUTY-6)**
- **In-use strategies: cleaning up the existing fleet (ON-RD HVY-DUTY-7)**

In-Use Strategies
(ON-RD HVY-DUTY-7)

- **PM retrofit fleet rules**
- **Engine recalibration - "chip reflash"**
- **HDDV fleet emission reduction program**
- **Reduced truck idling**

PM Retrofit Fleet Rules

- **Up to 85% reduction in PM emissions**
  - **Multi-level Diesel Emission Control Strategy Verification Procedures**
- **Expect commensurate ROG reductions**
- **Applicable to 90% of in-use fleet**
- **Implementation starting in:**
  - **2004: solid waste collection vehicles**
  - **2005: fuel cargo tankers**
  - **2005: public HDDVs**
  - **2006: private HDDVs (could include port cargo tankers)**

Engine Recalibration

- **Expands on Low-NOx Rebuild Program requirements**
  - **1993 - 1998 MHDDEs and HHDDEs**
- **Requires electronic control module recalibration to reduce off-cycle NOx**
- **Implementation starting 2004 - 2005**
- **Estimated emission reductions:**
  - **31 - 40 tpd NOx in 2005**
  - **18 - 23 tpd NOx in 2010**

HDDV Fleet Emission Reduction Program

- **Reduces NOx emissions from California-based HD diesel fleet vehicles**
- **Requires fleets to upgrade HDDVs**
  - **Accelerated new purchases/engine repowers**
  - **Diesel hybrid-electric vehicles**
  - **NOx retrofits**
  - **Alternative-fuel vehicles**
  - **Emulsified diesel fuels/other alternative diesel fuels**

Reduced Truck Idling

- **Require idle-limiting devices for 2007+ MY HDDTs (>33,000 lbs. GVWR)**
  - **1 - 2 tpd NOx reduced statewide in 2010**
- **ATCM approach for in-use vehicles**
  - **No-idle zones/restrict idling times**
- **In-use school bus fleet first priority**
  - **Proposal in 2003 for immediate implementation**
- **In-use heavy-duty diesel trucks next priority**
  - **2005+ implementaion**

Conclusions

- **Significant emission reductions already from heavy-duty diesel vehicles**
- **But emissions must be reduced more**
  - **Focus on in-use vehicles**
- **Goal is near-zero and zero emissions throughout engine's useful life**